Teamwork pays off

By Kylie Moritz

No one at JSC has ever won NASA's prestigious **Software of the Year Award** since its inception in 1994. That is, until now.

The hard work of an engineering team, led by Gerald "Jay" LeBeau, in the Aeroscience and Flight Mechanics Division has earned it this year's prize of $50,100.

"This is great recognition – not only for our team, but for the division, engineering directorate and JSC as well," LeBeau said.

LeBeau and his team earned the award for their Direct Simulation Monte-Carlo (DSMC) Analysis Code (DAC) software, which simulates rarefied gas dynamic environments. Because tests to gain knowledge on the interactions of spacecraft and rarified environments are difficult and expensive to perform, the software has the potential of saving many millions of dollars.

It has been used to support many JSC programs, including the International Space Station, X-38, space shuttle servicing missions to the Hubble Space Telescope and the Shuttle-Mir program. Other NASA Centers have used it to analyze the Mars Pathfinder, Stardust, Genesis, X-33, X-37, Mars Global Surveyor and Mars Odyssey vehicles. The revolutionary software is even being used by other government agencies, including the Department of Defense, to provide critical design information for missile defense concepts.

The team members who worked together to create the software include JSC's LeBeau, Forrest Lumpkin, Katie Jacikas and Phil Stuart, and Langley Research Center's Richard Wilmoth and Christopher Glass.

LeBeau first came to JSC in 1987 through the Cooperative Education Program program. In the early 1990s, LeBeau was working with simulation software to analyze how shuttle jet thruster firings might affect a future space station during rendezvous and docking operations. It was then that he started writing a completely new software package from scratch with better analysis capabilities than the current software, originally developed at Langley Research Center.

The team members at JSC, all stationed in the same room in Building 16, have worked together to improve the software. As part of NASA's Professional Development Program (PDP), Lumpkin taught a class at Rice University on the theory of the DSMC method. LeBeau and Stuart attended that class, which provided the fundamentals for LeBeau to create the new software.

"It may have even helped that I was a little inexperienced with the subject because I wasn't afraid to try things that hadn't been considered before," LeBeau said.

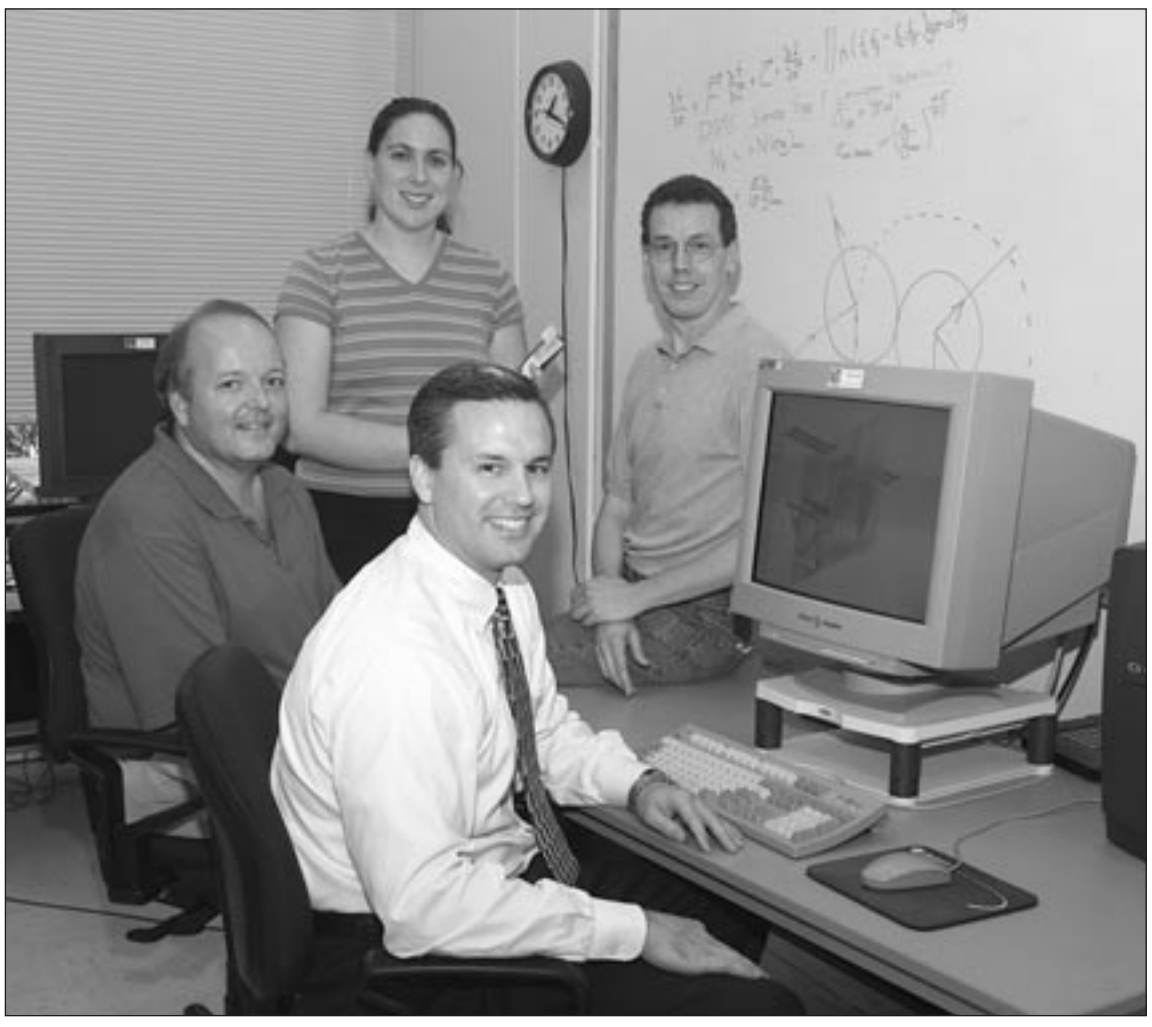
In 1995, during a one-year rotation through the PDP, LeBeau began writing the new software with help from the team members at Langley. Wilmoth, who had much more familiarity in the field, served as a mentor to LeBeau, providing expert insight to the project. Glass helped by verifying and validating the upgraded software.

In 2000, Jacikas brought in fresh ideas when she began working on the project at JSC as a co-op student. With LeBeau's guidance, she helped implement new capabilities for the software and continues to work with the team as a permanent employee. Stuart has worked with the team to integrate some of the software's post-processing capabilities.

The JSC team was co-awarded the Software of the Year Award with a team at Ames Research Center by NASA's Inventions and Contributions Board and Chief Information Officer.

"It is definitely an honor to be considered in the same league as the team members at Ames. I have a lot of respect for them and their work," LeBeau said. The software developed at Ames, Cart3D, is an aerodynamic simulation tool that provides designers and engineers with an automated, highly accurate computer-simulation suite that streamlines the conceptual and preliminary analysis of both new and existing aerospace vehicles.

More information about the winners may be found online at: http://icb.nasa.gov/swoy2002/.



NASA JSC 2002e36405 Photo by David DeHoyos

A NASA engineering team, led by Johnson Space Center's Jay LeBeau, was recently selected for the NASA Software of the Year Award. Pictured clockwise are the JSC team members who worked together to create the software: Katie Jacikas, Phil Stuart, Jay LeBeau and Forrest Lumpkin. Not pictured are Richard Wilmoth and Christopher Glass, two team members from Langley Research Center.

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